

STATUS OF WILDLIFE AND HABITAT CONSERVATION IN ANDHRA PRADESH¹

K. S. R. KRISHNA RAJU², A. V. R. G. KRISHNA MURTHY³, C. SUBBA REDDI⁴,

N. A. V. PRASAD REDDY⁵, R. LOKARANJAN⁶ AND K. J. N. G. SHANKAR⁷

(With two plates & two text-figures)

This paper describes certain major and conspicuous faunal groups and habitats in the State of Andhra Pradesh.

The State is endowed with diverse habitats such as wetlands of Kolleru and Pulicat, mangroves of Coringa, rich coastal lands, dry, grass and arid lands of Deccan plateau, humid moist deciduous forests of the northern Eastern-ghats and dry deciduous forests of Nallamalais. Consequently, rich diversity of plants, and animals occurs. However, as every where else in the country, the habitats such as forests, wetlands and grass lands are fast deteriorating and consequently, the fauna and flora are highly threatened in most parts of the State.

This report is based on travels and observations made over the last two decades and gives a general picture of the situation and is not claimed to be exhaustive and comprehensive. We hope that in the not too distant future, other naturalists can take up a more

elaborate and detailed status study, which is urgently required for each of the districts in the State.

LOCATION, PHYSIOGRAPHY AND CLIMATE

Andhra Pradesh (12°37'–19°54' N lat. and 76°46'–84°46' E long.) is the fifth largest State in the country in terms of land area, with a spread of 27.5 million hectares. The eastern boundary, facing the Bay of Bengal, is a 970 km long coast line. The state can be roughly divided into the following three distinct and major physiographic regions:

(1) Coastal plains, bordering the coast from Srikakulam in the north to Nellore in the south. The soils are rich coastal alluvial and red. Two major river deltas, Krishna and Godavari form the rich agricultural base.

(2) The Eastern-ghats region consists of a series of broken hills and ridges of varying elevations. They are roughly divided into northern and southern sections separated by a delta of about 130 km wide in the middle. The ghats in the south are generally known as the Sheshachalam ranges.

(3) Deccan plateau covers the entire Rayalaseema and Telangana region. The terrain is generally rocky with several outcrops, with red sandy or black cotton soils.

Climatically, the coastal belt is humid while the Deccan plateau is semi-arid to arid. The annual rainfall ranges from 500 mm in the

¹ Accepted February 1987.

²&⁵ A. P. Natural History Society, 11-2-6 Dasapalla Hills, Visakhapatnam 530 003.

³ Additional Chief Conservator of Forests, A. P. Government, Hyderabad 500 014.

⁴ Department of Environmental Sciences, Andhra University, Waltair 530 003.

⁶ Society for Nature Conservation, 43-A Gagan Mahal Colony, Hyderabad 500 029.

⁷ Society for Integrated Development through Environmental Awakening (IDEA), Prasanthisai, Alamanda R.S., Vizianagaram Dist., A.P.

south-western parts of the State to 1400 mm in the north-eastern areas like Srikakulam district — with an average of 890 mm. Nearly 70% of the total rainfall is received during south-west monsoon and 20% during north-east monsoon.

Rice, sugarcane, groundnut, tobacco, chilli, cotton, millets, maize and sorghum are the principal agricultural crops. Mango, cashewnut and coconut are the major plantation

crops. There are good water sources, specially in the coastal districts. They include three major river systems: Godavari, Krishna and Pennar. Large dams such as Nagarjunasagar, Srisailem, Tungabhadra, with their network of canals, besides several smaller reservoirs, lakes and tanks provide irrigation water.

The total geo area of the State is 2,75,068 sq km, of which 63,771 sq km is under forests (Fig. 1). The State has a total population of

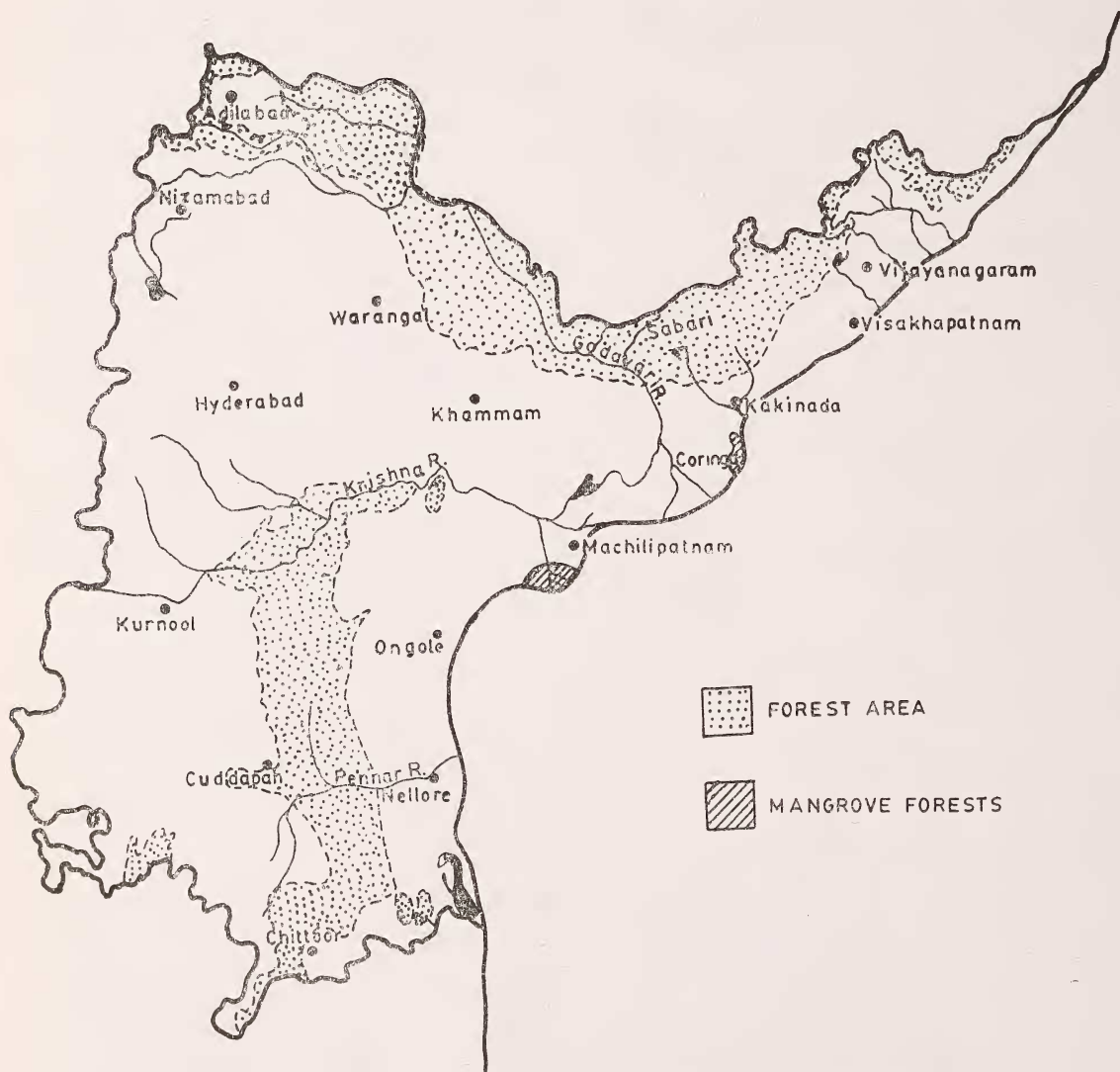


Fig. 1. Map of Andhra Pradesh showing the present well forested areas (Approximate).

535 lakhs, of which 410 lakhs is urban and 125 is rural—with a density of 195 per sq km. There are 27,221 villages and 255 towns and cities in 23 districts. Per capita forest area is 0.12 ha as against per capita land area of 0.51 ha. Total livestock is 357.40 lakhs, of which cattle, buffaloes, sheep and goat constitute a total of 306.32 lakhs.

WILDLIFE :

Forest Wealth:

The predominant vegetation in about 70% of the State forests is deciduous type; of which 45% is tropical dry deciduous and 25% moist deciduous and another 25% southern tropical thorn forests. Littoral and mangrove forests together constitute 5%. About 47 sq km area is under sal (*Shorea robusta*) and 9145 sq km is under teak (*Tectona grandis*) with the rest under mixed, miscellaneous tree species (Table 1).

The major floristic components are *Xylia* — *Terminalia* — *Anogeissus* — *Dendrocalamus*) (Plate 1), with second storey of *Chloroxylon* — *Pterospermum* — *Bridelia* — *Manilkara* species in most of the areas. Few evergreen species such as *Diospyros perigrina*, *D. sylvatica*, *Garcinia indica*, *Litsea chinensis* mixed with other deciduous species appear along the perennial streams in the deep valleys at higher elevations. In the Deccan plateau and other degraded forests of Telangana and Rayalaseema region, thorny-scrub type of vegetation predominates. *Prosopis*, *Acacia*, *Zizyphus*, *Gymnosporia*, *Borassus* and *Phoenix* are the major genera. In the mangroves *Avicennia*, *Excoecaria*, *Acanthus* are common. In the plains *Pongamia*, *Dalbergia*, *Mangifera*, *Azadirachta*, *Embllica*, *Ficus*, *Borassus*, *Phoenix*, *Casuarina*, *Anacardium*, *Eucalyptus* are prominent. Rolla *et al.* (1984), Krishna Murthy

(1984), Ellis (1984), give detailed accounts of the flora and forests of the State.

Significance of Floral Resources

There are several commercially useful tree species like *Tectona*, *Shorea*, *Dendrocalamus*, *Terminalia*, *Pterocarpus*, *Adina*, *Sterculia*, *Acacia* etc. which are well spread out. Red sanders (*Pterocarpus santalinus*) is endemic to A.P. and occurs in Cuddapah and Chittoor districts. The State is also endowed with some scientific curiosities such as *Drosera* and *Utricularia* among the insectivorous plants. *Polygala furcata*, *Prunus jenkinsi* which are interesting from phyto-geographic angle are also recorded in the State.

Several plant species of the Eastern Himalayan region are found in the Eastern-ghats of A.P., showing a discontinuous distribution. Orchids like *Vanilla wightiana*, germ plasm sources like *Atylosia cajanifolia* are recorded from the State. In the southern ghats of Cuddapah and Chittoor districts several rare plants like *Cycas beddomei*, *Terminalia pallida* are reported.

Faunal Wealth:

Very little is known about the status and distribution of amphibians and reptiles of the region (Pillai & Murthy 1984). *Rana tigerina*, *R. hexadactyla*, *R. limnocharis* and *R. crassa* are some of the common amphibians. *Bufo hololius* was recently collected from Nagarjunasagar. Golden gecko *Calodactylodes aureus* was recently discovered from Chittoor area (Daniel & Bharat Bhushan 1986). Other reptiles such as *Hemidactylus brooki*, *H. giganteus*, *Mabuya carinata*, *Calotes versicolor*, *Varanus bengalensis* are common. Among the snakes cobra, king cobra, russell's viper, green pit viper, python, ratsnake, whip snake, keel-back, and krait are common.

BIRDS :

The State is endowed with a wide variety of avifauna which includes the great Indian bustard, Jerdon's Courser, lesser florican, grey pelican, several species of water fowl, waders, ducks and teals, raptors, flycatchers, warblers, babblers, game birds, woodpeckers etc. (Salim Ali 1931-32, Whistler & Kinnear 1930-37). Subsequent contributions came from Abdulali

(1945, 1953), Krishna Raju (1971, 1973), Ripley *et al.* (1987), Beehler *et al.* (1987), Price (1980) which give us a deeper insight into the avifaunal resources of the State. Krishna Raju (1985) listed 300 bird species from Visakhapatnam region. Siraj Taher, from Hyderabad is presently engaged in preparing a checklist of birds of the entire State (Pers. comm.).

TABLE 1
STATISTICAL PROFILE OF A. P. FORESTS

	Land area (Sq km)	Forest area (Sq km)	% of Forest area to land area
A. REGIONAL :			
Andhra (Coastal)	92,906	19,746	21.15
Rayalaseema	67,299	14,951	22.21
Telangana	1,14,863	29,074	25.31
Total	2,75,068	63,771	23.18
B. LEGAL STATUS :			
Reserved		49,921	78.30
Protected		12,343	19.40
Unnotified		1,507	2.30
Total		63,771	100.00
C. COMPOSITION (Nonconiferous broad leaved)			
Sal		47	0.07
Teak		9,145	14.34
Others		54,579	85.59
Total		63,771	100.00
D. FOREST TYPES :			
Southern tropical thorn		16,110	25
Southern tropical moist deciduous		16,100	25
Tropical dry deciduous		28,388	45
Littoral forests		2,856	4
Mangroves		317	1
Total:		63,771	100

(SOURCE: A.P. Forests at a glance 1984-85).

Jerdon's Courser, long considered extinct has been rediscovered in 1986 near Siddavatam in Cuddapah (Bharat Bhushan 1986). The endangered great Indian bustard and lesser florican occur in the State in the Deccan plateau. The pink-headed duck, now considered extinct, was earlier recorded from the State (Abdulali 1945). Kolleru at one time was considered to be the largest breeding colony of the grey pelican in the country.

The occurrence of some bird species in the State is of Zoogeographical interest (Krishna Raju 1976, 1984). Such species include tree sparrow, Abbott's babbler (Ripley & Beehler 1985) and little spider hunter, which have been collected recently from Eastern ghats. Several species found in the State are considered to be relict fauna showing discontinuous distribution and some species show very restricted breeding range confined to the State. Several migrant passerines, waterfowl and waders pass through the State on migration.

MAMMALS :

The State has a wide variety of mammals ranging from tree shrew (*Anathana ellioti*) to tiger (*Panthera tigris*) and dolphin (*Delphinus delphis*) to Dugong (*Dugong dugon*) (Table 2).

Among the primates, bonnet macaque (*Macaca radiata*) and rhesus macaque (*Macaca mulatta*) are common, the former generally confined to the south, while the latter to the north. Common langur (*Presbytis entellus*) is seen in the northern hilly areas. Slender loris (*Loris tardigradus*) seems to occur in the forests of Chittoor district now forming part of Sri Venkateswara sanctuary.

Among the cats, leopard (*Panthera pardus*), tiger (*Panthera tigris*) and jungle cat (*Felis chaus*) are present in most districts. The com-

mon mongoose (*Herpestes edwardsi*) and small Indian civet are seen generally in the northern parts of the State.

The striped hyena (*Hyaena hyaena*) is still the common scavenger in the countryside. Indian wolf (*Canis lupus*) is now confined to deccan plateau (Anantapur, Karimnagar, Mahaboobnagar areas) though there were reports from Visakhapatnam including present Vizianagaram district till 1970. These two animals created havoc by resorting to lifting of children in 1980-81. The jackal (*Canis aureus*) is still very common all over the State, while the fox (*Vulpes bengalensis*) is relatively rare.

Indian wild dog (*Cuon alpinus*) is seen in almost all the forest districts, particularly in the Eastern-ghat ranges. Their numbers have been relatively reduced over the years. Ratel (*Mellivora capensis*) is found mostly in Visakhapatnam-Vizianagaram forests. The sloth bear (*Melursus ursinus*) is very common in the State. In the recent past, reports appeared of their attack on humans in northern circular districts — and at least 20-30 maulings occur every year. Porcupine (*Hystrix indica*) occurs in all districts in suitable habitats. The Indian hare (*Lepus nigricollis*) is equally common, though there has been great reduction in their numbers.

Indian gaur (*Bos gaurus*) is distributed in the well forested tracts of Visakhapatnam, East Godavari, West Godavari, Khammam, Warangal, Karimnagar and Adilabad districts.

The chinkara (*Gazella gazella*) is confined to the north-western parts of the State mostly to the districts of Khammam, Adilabad and the surrounding areas. The blackbuck *Antelope cervicapra* occurs mostly in the plains of Deccan and North-western districts and on some islands of the river Godavari. Chowsingha (*Tetracerus quadricornis*) is common in the forests of Visakhapatnam and Vizianagaram, while nilgai (*Boselaphus tragocamelus*), in the

TABLE 2

LIST OF SOME COMMON ANIMALS OF ANDHRA PRADESH

Sl. No.	English Name	Latin Name	Vernacular Name (Telugu)
1.	Tree Shrew	<i>Anathana ellioti</i>	—
2.	Ratel	<i>Mellivora capensis</i>	Tirru Elugu
3.	Rhesus monkey	<i>Macaca mulatta</i>	Kothi
4.	Bonnet monkey	<i>M. radiata</i>	Kothi
5.	Common langur	<i>Presbytis entellus</i>	Anu pothu
6.	Tiger	<i>Panthera tigris</i>	Pedda puli
7.	Leopard	<i>P. pardus</i>	Sindhuvu
8.	Jungle cat	<i>Felis chaus</i>	Bakuru billi
9.	Hyena	<i>Hyaena hyaena</i>	Dummula gondi
10.	Wolf	<i>Canis lupus</i>	Pedda nakka
11.	Jackal	<i>C. aureus</i>	Nakka
12.	Indian fox	<i>Vulpes bengalensis</i>	Chinna nakka
13.	Wild dog	<i>Cuon alpinus</i>	Resu kukka
14.	Sloth bear	<i>Melursus ursinus</i>	Elugu banti
15.	Porcupine	<i>Hystrix indica</i>	Mulla pandi
16.	Indian hare	<i>Lepus nigricollis</i>	Chevula pilli
17.	Sambar	<i>Cervus unicolor</i>	Kanuju
18.	Indian gaur	<i>Bos gaurus</i>	Bison/Anubothu
19.	Spotted deer	<i>Cervus axis</i>	Duppi
20.	Barking deer	<i>Muntiacus muntjak</i>	Konda meka
21.	Chowsingha	<i>Tetraceros quadricornis</i>	Bayata meka
22.	Chinkara	<i>Gazella gazella</i>	Burra jinka
23.	Nilgai	<i>Bosephalus tragocamelus</i>	Manu meka
24.	Slender loris	<i>Loris tardigradus</i>	—
25.	Small Indian civet	<i>Viverricula indica</i>	Boothu billi/Manu billi
26.	Black buck	<i>Antilope cervicapra</i>	Krishna jinka
27.	Pangolin	<i>Manis crassicaudata</i>	Alugu

forests of Khammam, Adilabad, Nalgonda and in Nallamalais.

Among the deer, the sambar (*Cervus unicolor*), spotted deer (*Cervus axis*) and barking deer (*Muntiacus muntjak*) are common in forest habitats. Mouse deer (*Tragulus meminna*) is mostly seen in Vizianagaram forests.

The wildboar (*Sus scrofa*) is the commonest wild animal in the entire State. Till 1960s the wild buffalo (*Bubalus bubalis*) roamed in the forests of Sileru/Guntawada areas in Visakhapatnam district, but has now retreated to the Bastar forests of Madhya Pradesh.

A small herd of elephants (*Elephas maximus*) appeared recently in the forests of Chit-

toor district, and a lone tusker strayed into Srikakulam forests.

SANCTUARIES :

The State has 15 wildlife sanctuaries (Table 3) and 5 deer parks. Ten of these sanctuaries are located along the Godavari river system including the three in the Eastern-ghats region (Papikonda, Nagarjunasagar-Srisailam and Venkateswara), and four along the east coast

(Kolleru, Coringa, Nelapattu and Pulicat) (Figure 2).

The sanctuaries constituted first in the State were Pakhal and Pocharam in Warangal and Medak districts in 1952 under the Hyderabad forest Act. Eturnagaram (Warangal district), Kawal (Adilabad) were declared in 1965 under A.P. Forest Act. Kolleru was declared in 1963. The Indian wildlife (Protection) Act, 1972 was extended to the State in 1973, under which the existing five sanctuaries

TABLE 3
LIST OF WILDLIFE SANCTUARIES AND MAJOR FAUNA — IN A.P.

Name	District	Area (Sq km)	in the year Established	Major animals
1. Kawal Sanctuary	Adilabad	893	1965	Tiger, Leopard, Sambar, Spotted deer, Indian Gaur, Nilgai.
2. Pranahita Sanctuary	„	136	1980	Tiger, Leopard, Spotted deer, Blackbuck, Sloth bear.
3. Lanjamadugu Sanctuary	„	36	1978	Largest Tiger reserve in India.
4. Nagarjunasagar-Srisailam Sanctuary	Guntur, Prakasam, Kurnool, Mahaboobnagar, Nalgonda	3268	1978	Tiger, Leopard, Sloth Bear, Wildboar, Spotted deer, Sambar, Nilgai, Chowsingha, Jackal, Fox, Mugger.
5. Manjira Sanctuary	Medak	20	1978	Marsh Crocodile
6. Pulicat Sanctuary	Nellore	600	—	Pelican, Flamingo and migrant water birds.
7. Coringa Sanctuary	East Godavari	235	1978	Estuarine Crocodile, Otter, Jackals, Sea turtle, Waders etc.
8. Kinnerasani Sanctuary	Khammam	655	1977	Tiger, Leopard, Sambar, Spotted deer, Wild-dog, Hyaena, Blackbuck.
9. Eturnagaram	Warangal	800	1953	Tiger, Panther, Sloth bear, Gaur, Nilgai, Chowsingha, Muntjac.
10. Nelapattu Sanctuary	Nellore	—	—	Grey Pelican nests on 14-15 Barringtonia trees, Cormorants, White
11. Kolleru Sanctuary	West Godavari	670	1963	Ibis etc. Water birds.
12. Pocharam Sanctuary	Medak/Nizamabad	130	1952	Panther, Sloth bear, Spotted deer.
13. Sri Venkateswara Wildlife Sanctuary	Cuddapah Chittoor	506	1986	Panther, Jackal, Fox, Sloth bear, Nilgai, Mouse deer.
14. Pakhal Wildlife Sanctuary	Warangal	860	1952	Tiger, Panther, Sloth bear, Gaur.
15. Papikonda Wildlife Sanctuary	West Godavari	590	1978	Tiger, Panther, Gaur, Fourhorned antelope.



Fig. 2. Andhra Pradesh showing approximate location of the Eastern ghats, important wildlife sanctuaries including those to be declared soon.

were covered under section 66 in 1976. Nelapattu and Pulicat sanctuaries (Nellore district) were declared in 1977 along with Kinnerasani sanctuary (Khammam district). Five more sanctuaries: Nagarjunasagar-Srisailam, Manjira, Papikonda, Lanjemadugu and Coringa were constituted in 1978. In 1980 Pranahita was declared. In 1986 Sri Venkateswara sanctuary was declared in Chittoor district.

Population of Major Animals:

It is unfortunate that except for tiger, there are no population estimates for any major animal groups in the State. There are reportedly 164 tigers in the State including 65 in Srisailam Tiger Project as per the Forest Department Statistics. Subba Rao *et al.* (1984) stated that a population of 66 Indian gaur exists in and around Marripakala in Visakha-

patnam forest circle. A population of 30-40 Great Indian bustards is reported by the Forest Department from Nandikotkur taluk in Kurnool district. At the central Crocodile rearing station, Hyderabad, 385 muggers, 20 salt water Crocodiles and 28 gharials have been reared so far, of these 154 muggers have been released back into the Krishna river (Nagarjunasagar-Srisailem sanctuary), 15 in Pakhal lake, 33 in Kinnerasani reservoir. Three salt water Crocodiles were released in Coringa sanctuary. The muggers released in 1977 at Ethipothala have reportedly bred during 1981.

HABITAT, CONSERVATION AND GENERAL OBSERVATIONS

The Eastern ghats:

The Eastern-ghats in the state running almost parallel to the coast as a broken chain of mountains, are divisible into two distinct sub-zones. The northern sub-zone consists of the hills of Srikakulam down south to the Godavari river along the districts of Vizianagaram, Visakhapatnam, East and West Godavari districts. After a gap of nearly 130 km the southern sub-zone commences and includes the hills of Nallamalais and Seshachalam. The southern hills are better known as the Seshachalam ranges. These together with the Nallamalais, Velikondas, Palakondas, Yerramalais and Lankamalais form the Eastern-ghats complex in southern Andhra Pradesh. The southern sub-zone is generally of drier formation with inferior dry-deciduous forests and thorny scrub, while the northern sub-zone is relatively richer with forests of dry and moist deciduous types and with higher rainfall.

The forests of the Eastern-ghats account for c. 50% of the total state forests. These are being exploited incessantly and are getting opened up day-by-day in the name of deve-

lopment, often illegally. Most of the hills and once luxuriant valleys are stripped bare as in the case of Chintapalli plateau and Anantagiri-Araku (Plate 2) valley during the last quarter of the present century. Many vital rivers and reservoirs are fast getting silted up overgrazed and highly degraded with consequent soil erosion in most of the areas. Illegal encroachments for shifting cultivation are widespread. All this naturally affects not only the local faunal populations but also the tribals and the total ecology of the region. Large birds such as pea fowl, jungle fowl, partridges, quails and hornbills, and mammals have either disappeared from large areas or retreated to few patches of sheltered forests.

In response to the appeals made by the Andhra Pradesh Natural History Society and thanks to the intervention of Dr. Salim Ali, the Department of Environment, Government of India organised a National Seminar on the Resources, Development and Environment of the Eastern-ghats, during March 1982 in the Andhra University, Waltair, to take stock of the situation. Coinciding with the seminar, Andhra Pradesh Natural History Society brought out a report (Krishna Raju 1982) on the ecological survey of the Eastern ghats, based on a study funded by the World Wildlife Fund-India. This was the beginning of our organised efforts to conserve the Eastern ghats. The Seminar recognised that the ghats and the adjoining wetlands are under severe environmental stress and many natural resources therein are not being managed on sound ecological principles to ensure sustainable yields. Several recommendations were made at the Seminar stressing the need to arrest further deterioration of the situation and to restore the required ecological balance. However, so far no serious attempts have been made by the Government to launch a concrete conser-

vation action except sponsoring some research projects. The need to generate additional data base is no doubt unquestionable, but if the efforts to safeguard the ghats are to begin with studies on tectonics or water quality, one has serious doubts on the wisdom of fixing priorities. Based on the data available, an action plan spelling out necessary executive and legislative actions and restoration steps, is to be chalked out and launched for implementation. Additional researches should of course be initiated simultaneously and the resultant answers used to modify and to better the ongoing conservation plan. This approach would be more useful and is urgently required in the Eastern-ghats areas and it is hoped that the Government would re-examine its approach, keeping in mind the fact that we are fighting a battle against time. The few surviving pairs of Tree Sparrow or Indian gaur may not last long.

Wet-Lands:

Among the wet-lands of Andhra Pradesh, Kolleru lake is the largest fresh water lake in the State, occupying parts of the East Godavari and Krishna districts. It assumed significance with the discovery of the largest breeding colony of grey pelicans (*Pelecanus philippensis*) in the early 1960s (Neelakantan 1961).

The Indian Board for Wildlife recommended the protection of pelicans at Kolleru and the Andhra Pradesh Government had subsequently declared it as a bird sanctuary in 1963. However, for various reasons the pelicans have virtually disappeared now. Over exploitation of fish resources, damage to the nesting trees, lack of adequate and suitable nest building material, heavy poaching, polluted water among other things must have forced the pelicans to abandon the area. However, the lake still attracts a good number and variety of migratory ducks and waders and other

breeding birds such as jacanas, moorhen. The lake is getting silted up fast with consequent loss of flood absorption capacity, which is directly related to the loss of vegetative cover in the catchment area. Vast areas of the lake have been encroached upon for agriculture and aquaculture and free flow of water is affected in a major portion of the lake due to ill conceived network of roads, creation of fish tanks, etc., which are also affecting the lake and its ecosystem. Added to these are the effluents drained out into the lake by several industries including a pesticide, a paper and a milk processing factories.

We reckon that it is virtually impossible to reattract the lost pelicans at Kolleru. Instead, the existing breeding birds and visiting migrants should at least be protected and the lake ecosystem safeguarded. Overexploitation of fishery resources like *Anabas* and *Heteropneustes* requires to be controlled and eutrophication of the lake needs to be checked. The developmental plans conceived by the State Government and being implemented by the Kolleru Lake Development Board should therefore be directed to ensure a healthier environment of the lake and to protect its valuable birdlife, besides other things.

Another important wetland in northern Andhra is Kondakarla lake near Anakapalli in Visakhapatnam district. This is fed by a channel from river Sarada. This 600 ha lake is famous for its waterfowl. The only record of pink-headed duck in the State was from this lake. Though bereft of any standing vegetation, the lake still attracts thousands of migrant ducks and dozens of flamingoes every year. The State Government plans to declare this a bird preserved and has appointed a watcher, but poaching still continues.

Nelapattu sanctuary and Teli-Neelapuram bird reserve attract some breeding grey pelicans (c. 500 pairs), cormorants, openbilled



Above: A view of dry deciduous forest *Xylia — Adina — Anogeissus*.

Below: Sileru river in the upper reaches near Araku showing denuded hills in the background.
The river bed is raising fast due to soil erosion.

(Photos: Author)



Above: A view of once luxuriant Anantagiri — Araku Valley, looking bare. Vernay survey collected several new-subspecies of birds from this region.

Below: A confiscated Grey jungle fowl from Khammam forests, one among the estimated 10-15,000 snared illegally for smuggling, every year.

(Photos: Author)

storks, painted storks etc. Pulicat is another major lake system on the coast near Nellore which attracts thousands of wintering ducks and flamingoes. Bhimasinghi lake, Rolugunta lake, Pakhal lake, Fox sagar, are some other important wetlands in the State. However, most of them are either polluted, drained too much or reclaimed heavily, and have generally lost their value as ideal bird refuges. Even for the famous Kolleru bird sanctuary, no listing of birds is done in a systematic manner and it is essential to determine the bird population dynamics for any meaningful management of the sanctuary.

Sloth bear and other large animals used to be common in the entire forested part of Adilabad district are now confined to Bijjur and Birsaipet forests. Spotted deer, four horned antelope and leopard used to be common in most of the forests of Visakhapatnam district are now confined to deeper and relatively sheltered parts in the ghats. This is the case with all other districts in the State. Wildlife of Mahaboobnagar district is mostly confined to the interior Amarabad and Farhabad forests. In Medak district the important faunal areas now are around Narsapuram and Narayankhed. Mahadevipatnam and Tadicherla blocks in Karimnagar districts, Seethampet and Tekkali areas in Srikakulam district, Parvathipuram in Vizianagaram district, Srisailam — Nagarjunasagar areas in the central Andhra Pradesh, Chittoor hills in the south, Bhadrachalam, Perantapalli, and Koonavaram in the north are some other major faunal areas. However, poaching from Jeep using search lights and snaring by nomadic tribes did irreparable damage to the wildlife. Till 1983 at least 10-15 thousand grey jungle fowl were snared from Bhadrachalam, Manugur forests for their neck feathers which used to be smuggled out through Madras Port every year (Plate 2). Similarly, nomads operate snaring

parties to capture snakes, hare, jackals, partridges, quails, etc. Their operations have slowed down now, mainly due to relative dearth of animals in the State.

The precarious position of the existing wildlife calls for adoption of some drastic steps by the Government. Firstly, the needed political will and commitment that is lacking today needs to be created, without which the officials are helpless. For example, the Telugu Ganga canal which is originally planned to run through Cuddapah district may have to be slightly realigned to save the Jerdon's Courser habitat. However, such attempts are bound to be viewed with suspicion by the politicians who are yet to appreciate that no cost is too much to save the Jerdon's Courser. Telugu Ganga is perhaps a vital scheme, but the total forest area which is going to be submerged under the Project will be about 9937.40 ha (6823.41 ha under the reservoir in Kurnool, Cuddapah and Nellore districts, and 3113.99 ha under canals in the forest divisions of Atmakur, Nandyal, Proddatur, Nellore and Chittoor).

There are proposals for setting up an export oriented bauxite project in Chintapalli area of the Visakhapatnam district. The NALCO plans to exploit the bauxite found at Jerrela near Chintapalli and the project aims at having a mining complex at Jerrela, township at Chintapalli, Wagon loading complex at K. D. Peta. The ore is to be transported through a conveyor system to K. D. Peta (a distance of about 37 km, which also requires a corridor of 20 m wide and a maintenance road of 25 m wide, all along the route) which is likely to pass through some of the virgin and excellent forest areas of Chintapalli plateau. These forests hold several important bird species such as abbott's babbler, little spider hunter, and tree sparrow. Large scale industrialisation of the Chintapalli area and consequent settlements

and problems such as over burden disposal at the mine head are therefore to be viewed with great caution. The proposed network of roads and conveyor corridor in the most important ecosystem of the Eastern-ghats may cause great damage to the ecology of the region. Parts of the area also form part of the proposed Gudem-Marripakala sanctuary, which has been under the consideration of the Andhra Pradesh Government for the last 10 years. Indian gaur, spotted deer, sambar, barking deer are still common in these areas, besides several birds. A detailed environmental survey is needed before clearing the project.

About 2200 ha of forest area is likely to be submerged under Srisailam reservoir. Added to these, the State Government has recently declared that all the interior and remote tribal areas will be connected by a network of roads and electrified. We feel that such hasty developmental planning without considering the ecological implications may affect the regions ecology and economy and prove harmful even to the tribals.

Based on the data collected by the Satellite imagery, NRSA (Anonymous 1983) concluded that the actual forest area in Andhra Pradesh is significantly lower than the estimations made through conventional methods by earlier workers and the deforestation during 1972-75 and 1980-82, with an interval of about 7 years, was alarmingly high. The State has lost 3.11% of forest area in approximately 7 years time. "To allow such a high rate of deforestation to continue is to invite ecological disaster on a large scale.", the report warned.

The general attitude of the State Government and consequently the forest department is to treat the forests as a source of revenue. Hence, hitherto emphasis has been given for production forestry, while conservation and protection forestry has been generally neglected. This had resulted in large scale clear felling

of "least productive mixed natural forests" and planting of economically more "useful" species like teak and *Eucalyptus*, often, as monoculture. As a result, bird and mammal life suffered badly and with the shrinkage of natural forest cover most of them either disappeared or retreated deep into the interior forests. Teak offers virtually no useful environment for birds and possibly mammals. However, Coffee plantations in the Eastern-ghats involve the use of remnant forest overstorey and most of the existing plantations have been found to be an integrated system that is structurally and taxonomically complex. Such an artificial habitat supports a relatively wide variety and more numbers of faunal groups and is a better alternative than mono-culture teak.

The Forest Department should spell out a charter of specific objectives for each of the sanctuaries in the State. For instance at Kolleru sanctuary the objective now can be to protect the breeding and wintering birds and to develop suitable habitat, for Nagarjunasagar-Srisailam sanctuary the principal objective can be to maintain optimum number of tigers through developing a habitat conducive for the growth of adequate herbivore population etc. Once these are made, an integrated plan of action needs to be initiated to serve the primary goals. But, if plans are made to increase deer population and large scale timber extraction is also allowed simultaneously the goals can never be met. In most of the sanctuaries of the State, habitat development is urgently required and a strong research base has to be built up.

It is essential that the few remaining stretches of undisturbed tracts of forest, specially in and around Chintapalli, Jyothimamidi, Gudem, Marripakala should be declared natural reserves with complete protection from disturbance and future forestry developmental activities. If developmental

plantations are to be attempted elsewhere, they should preferably exclude teak monoculture, except in badly eroded areas. Preferred development would feature coffee plantation under maximum natural over storey, interspersed with remnant forest tracts in the Chintapalli plateau (Beehler *et al.* 1987).

In 1985 one of the authors (KSR) along with the scientists of BNHS/ZSI/ and the Smithsonian Institution visited Anantagiri — the type locality for several birds. Since the Vernay Survey, the region has been heavily 'developed' with large tracts of coffee, intensively grazed areas and much cultivation. Virtually no forest remains except in small patches and the area could be characterised as severely disturbed and the destruction of the original habitat is nearly total. The remnant patches continue to support some of the 'relict' species of great biological interest, but the populations are small, vulnerable and isolated. The forest dwelling birdlife in this region appears highly threatened. By contrast, the open country species, most of which have colonized this upland region from the plains, are abundant. "The man caused environmental dessication at Anantagiri and in some other sections is causing a faunal transition, on a local scale. The future of the forest avifauna in Visakhapatnam ghats remains in doubt" (Ripley *et al.* 1987).

It is sadly true that the data presently available in respect of wildlife resources are very meagre, but this does not necessarily mean that we should initiate bench mark studies towards wildlife conservation. Few threatened species and vulnerable areas which are already identified need to be protected, on priority basis. Rollapadu, Nandyal area for Great Indian Bustard; Reddipalli and Siddavatam along the banks of river Sagileru for Jerdon's courser, Gudem-Marripakala area for Indian gaur, Addatheegala-Jyothimamidi,

Maredumilli for tiger, are but few examples. Investigations are also to be carried out on the reasons why sloth bear population is disturbed now in northern Andhra and why sambar and wildboar from Koonavaram/Perantapalli show dwarfism (Parakeratosis) and why sambar and leopard are abundant near Meliaputti/Seethampet in Srikakulam scrub jungles, despite poor habitat and heavy poaching.

Suggestions:

(1) The A. P. State should arrange to document the 'Status of the Environment' with separate chapters on wildlife and conservation.

(2) Based on the data available, a conservation strategy has to be formulated and adopted with immediate effect. While the essential principles can be rigidly framed and followed, the operations can be kept flexible for modifications — if additional data collected in future warrant any changes.

(3) There are tremendous pressures on the forest land and other wilderness areas — which are to be very carefully evaluated and the forest cover and quality need to be maintained if not improved.

(4) There is an urgent need to initiate field studies in wildlife biology in the State and status study in all the districts. We recommend experimental wildlife farming to re-stock the forests and countryside with such common species like wildboar, hare, partridge and deer.

(5) The voluntary and non-Governmental bodies have a definite and important role to play in conservation efforts and they should be taken into confidence by the State for achieving the stated goals.

(6) Our major objectives should be to initiate a developmental strategy which will be ecologically sound, sociologically acceptable and economically viable.